LONG TERM MONITORING SENSOR/ANALYTICAL METHODS WORKSHOP

Overview:
Recently there has been increased focus on the importance of technologies that will be applied to long term monitoring programs (LTM) for environmental restoration projects in DOE. One aspect of the various long term stewardship activities will be the use of cost effective detection technologies for monitoring subsurface contaminants. Various optical, chemical, electrochemical, electrical, and mechanical techniques (or combinations of these) are currently available commercially and can be applied to LTM, in lieu of the baseline sampling and analysis practices. However, considering the long life cycle of performance monitoring required at DOE sites, monitoring technologies must continue to be developed to have improved performance characteristics such as reliability, material stability, robustness, calibration and limiting system drifts, sensitivity and selectivity to meet the changing compliance requirements.

To address these issues, the Subsurface Contaminant Focus Area program will host a workshop to evaluate the currently available or newly emerging sensors and analytical instruments used for LTM of contaminants in the subsurface. The LTM needs identified by the DOE sites will be listed and used to establish the functional and operating requirements for potential LTM technologies. Workshop participants will evaluate a list of technologies for their effectiveness to meet the site LTM requirements. Opportunities for R&D improvements to existing technologies will be identified. Newly emerging analytical techniques that have potential for addressing the LTM requirements will also be identified. And finally, areas where existing technologies don't adequately meet the requirements will be identified as long term R&D opportunities.

Workshop Date and Location:
June 13 (noon) – 15 (noon), 2001 following the International Containment Technology Conference (www.containment.fsu.edu)
Radisson Hotel Universal Orlando in Orlando, FL

Workshop Objectives:
- Assess the LTM sensor/analytical needs
- Define the technical functional requirements for the needs
- Examine available technologies
- Evaluate application of current technologies against functional requirements
- Assess technology shortcomings and gaps
- Identify research areas of highest priority

Workshop participants:
- Site technical managers overseeing site projects and/or negotiating regulatory agreements
- Researchers involved in the development of LTM sensors/technologies for detection and quantification of contaminants

Documents prepared prior to workshop:

- Listing of LTM analytical technology needs
- Listing of available analytical LTM technologies

Workshop topics will be limited to sensors/analytical methods that detect:

- Contaminants: volatile/semi-volatile organics, metals, radionuclides
- Matrix: contaminants in soil and groundwater or vapor in vadose zone
- Technology types: sensors and field analytical techniques
- Sensor delivery systems: downhole and above ground detection techniques

Breakout groups:

- First breakout sessions by problem area such as VOCs in vapor or groundwater, metals in soils and groundwater, radionuclides in soils and groundwater
- Second breakout sessions by technology classes such as portableGC or GC/MS, x-ray fluorescence analyzers, immunosensors, electrochemical sensors, fiber optic sensors, or chemically based sensors

Questions to be answered at workshop:

- What are the commercially available or emerging sensors/methods for long term monitoring of subsurface contaminants?
- Do existing analytical methods cost effectively meet the LTM needs?
- Where can improvements be made or should new sensors be sought?
- Are current sensor/analytical R&D programs (universities, federal laboratories, private sector) developing sensors for environmental contaminants?
- Should new approaches to collecting contaminant measurements be considered?
- Are there new methods/sensors under development for commercial or other applications that could be considered for environmental applications?

Deliverables from workshop:

- Listing of LTM analytical technology needs evaluated and modified based on workshop participant input
- Listing of LTM analytical functional requirements
- Listing of preferred technologies for application to different LTM requirements
- Identify emerging technologies that require further testing/development
- Identify long-term and short-term R&D areas

If you are a researcher/developer of analytical techniques/sensors and want an opportunity to assist the government in identifying appropriate R&D areas for future LTM techniques, please call Caroline Purdy at **410-263-1404**.